

We claim:

1. A vehicle, comprising:

two or more wheels, and

one or more electric motors, each mounted in an in-wheel, near-wheel, or direct-

10 drive manner,

wherein at least one motor is an in-wheel motor with torque density of at least 20

Nm/kg and comprises a multiphase machine having a rotor, a stator, the stator comprising

a plurality of stator core elements, the plurality of stator core elements being arranged in

groups, each group of stator core elements being associated with a corresponding one of

15 the phases of the multiphase machine, the stator core elements in each group being

structurally and electromagnetically isolated from the stator core elements in each other

group, and a controller for controlling electrical flow in each group of stator core

elements independently of electrical flow in each other group, whereby each phase of the

multiphase machine is controlled independently of each other phase.

20 2. A car or other vehicle with two or more wheels and one or more electric

motors to move the vehicle,

where at least one motor is an in-wheel motor with torque density of at least 20

Nm/kg.

3. A car or other vehicle with two or more wheels and one or more electric

25 motors to move the vehicle,

where at least one motor is a near-wheel motor with torque density of at least 20

Nm/kg.

5        4. A car or other vehicle with two or more wheels and one or more electric motors to move the vehicle,

where each motor is mechanically linked with only one wheel of the vehicle and the torque density of at least one motor is at least 20 Nm/kg.

10      5. A car or other vehicle with two or more wheels and one or more electric motors to move the vehicle,

where each motor directly drives one or more wheels of the vehicle and the torque density of at least one motor is at least 20 Nm/kg.

6. A car or other vehicle with two or more wheels and one or more electric motors to move the vehicle,

15      where at least one motor is an in-wheel motor with each of its electromagnetic circuits being sufficiently isolated so that electromagnetic and electrical interference between the circuits is substantially eliminated in order to increase the effective response of the motor to control and optimization.

20      7. A car or other vehicle with two or more wheels and one or more electric motors to move the vehicle,

where at least one motor is an in-wheel motor with a motor control scheme that can be dynamically adapted to user inputs, machine operating conditions and machine operating parameters.

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